

70-4-7/16.

TARASOV, V.V.

AUTHOR: Tarasov, V.V.

TITLE: Atomic Chains and the Fine Structure of Glass.
(Atomnyye tsepi i tonkoye stroyeniye stekla).

PERIODICAL: Kristallografiya, 1957, Vol.2, Nr 4, pp.489-496 (USSR).

ABSTRACT: Discussion article. Observations on glasses by various authors are considered in terms of the theory of the specific heat of chains and lamellae developed by Tarasov. Glass is regarded as a heterodynamic system with bonds of various strengths - strong between Si and O and weaker between O and any metal ions. The ratio O/Si in moving from 2 to 3 indicated the departure of the structure from the framework type to the chain type. The role of water as a modifier is shown by French experiments on producing water-free glasses in a solar furnace. The general view of a glass agrees with that of Stevels who regards it as an inorganic high polymer with branched chain high polymer anions which dissolve cations of various sorts which modify the properties. A chain structure for the glass-forming matrix would represent most satisfactorily many physical and technological properties of glasses. The branched chain picture illuminates the following aspects: the structure of definite and indefinite compounds in the glass,

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! Atomic Chains and the Fine Structure of Glass.

the viscosity, the high viscosity in the softening range, the structural birefringence, the chain structure of the metaphosphates and the preferred orientation in metaphosphate fibres, etc. Kruch has explained the positive temperature coefficient of surface tension in glass melts in terms of the rubber-like elasticity of linear high polymers.

There are 10 figures and 22 references, of which 6 are Slavic.

ASSOCIATION: D.I.Mendeleev Chemico-Technological Institute.
(Khimiko-tekhnologicheskii Institut im. D.I.Mendeleeva).

SUBMITTED: February 22, 1957.

AVAILABLE: Library of Congress.

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TARASOV, V.V.

57-27-7-15/40

AUTHOR : Tarasov, V. V.

TITLE: Atom Chains and Fine Structure of Glass (Atomye tsepi i tonkoye stroyeniye stekla)

PERIODICAL: Zhurnal Tekhnicheskoy **Fiziki**, 1957, Vol. 27, Nr 7, pp. 1521-1533 (USSR)

ABSTRACT: A survey is given of the different theories and opinions regarding the structure of glass. At first the glasses are investigated as heterodynamic structures, then the problem whether the glasses are anorganic high-polymers is found by the author to be only partially correct. He is of the opinion that the cations of the modifier are correctly to be considered as monomer-ions dissolved in the structure. The glasses are distinguished from the true polymeric part (structure) possesses the character of a polyvalent ion-radical or of a highly-polymeric anion. Different opinions exist on the distant order in the glasses. It is shown that the two opinions can be reconciled by assuming that this distant order "sui generis" is to be considered a periodicity in the atom-distribution not according to straight lines but according to curves. Such a type of distant order is practically non-existent for the radiographic and electronographic methods. But its determinant value for a number of glass-properties is very great. It is shown that the fine structure of glass is due to the chain formation. On

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Atom Chains and Fine Structure of Glass.

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the one hand the opinion is advocated that the glasses almost always possess a continuous structure of the vitrifier, on the other hand, however, a two-dimensional polymerization is considered impossible. Then follows the investigation of the fine structure of anomalous phosphate-glasses with the aid of ultrasonics. It is shown that the chain-structure of the vitrifying structure reflects many physical and technological properties of glass. There are 9 figures, 1 table and 31 references, 14 of which are Soviet.

ASSOCIATION: Chemical-Technological Institute imeni D. I. Mendeleev, Moscow (Khimiko-tehnologicheskii institut im. D. I. Mendeleeva, Moskva)

SUBMITTED: November 29, 1956

AVAILABLE: Library of Congress

1. Glass-Structure-Theory 2. Ultrasonic-Applications

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7/18/50, V V

57-10-28/33

AUTHOR: Tarasov, V. V.

TITLE: On the Temperature Factor e^{-2M} for the Intensity of Bragg Maxima in the Case of Chain Crystals (O temperaturnom mno-zhitele e^{-2M} dlya intensivnosti breggovskikh maksimumov v sluchaye tsepochechnykh kristallov)

PERIODICAL: Zhurnal Tekhn. Fiz., 1957, Vol. 27 Nr 10, pp. 2398-2403 (USSR)

ABSTRACT: The author refers to the theory developed by himself (in the years from 1945-1951) as well as to the experiments carried out at home and abroad on its basis. The formula for the specific heat in the case of a chain structure of crystals is given and the author shows that, as this formula was proved to be valid for selenium, tellurium, teflon, hydrofluoric acid etc. by the various experiments, there is a certain right to use it as a simple distribution law for frequencies for an approximate finding of the magnitude of the temperature multiplicand e^{-2M} for the case of a chain crystal. The formula for the mean square value of the displacement

$\langle \bar{u}^2 \rangle$ is deduced in a direction vertical to one of the reflecting planes for Mcat. In the formula obtained there are, besides the two members which correspond to the theory of Debye-Vallera, two more members contained which reflect

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On the Temperature Factor e^{-2M} for the Intensity of Bragg
Maxima in the Case of Chain Crystals

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the characteristics of the temperature multiplicand
Meat. (i. e. catina=chain) for a chain crystal. The author
shows that in the case of the equality of the characteristic
frequencies of "internal" and "external" oscillations, i. e.
at the transition from the hetero- to the homodynamic stru-
cture (from the anisotropic chain continuous spectrum to the
isotropic continuous spectrum of Debye) the formula deduced
here transforms into the ordinary formula of Debey-Vallera
for MD ! There are 2 tables, 2 illustrations and 17 Slavic
references.

ASSOCIATION: Chemical-Technical Institute imeni D. I. Mendeleyev, Moscow
(Khimiko-tekhnologicheskij institut imeni D. I. Mendeleyeva,
Moskva).

SUBMITTED: April 15, 1957

AVAILABLE: Library of Congress

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TARASOV, V. V.

The Correlation between the structure of glasses and their adiabatic compressibility."

report presented at the 6th Sci Conference on the application of Ultrasound in the Investigation of Matter, 3-7 Feb 1958, Moscow, Organized by Min of Education RSFSR and Moscow Oblast Pedagogic Inst. im N. K.Krupskaya.

SOV 156 - 58-1-39/46

AUTHORS: Matveyev, M. A., Mostovaya, O. A, Tarasov, V. V.

TITLE: Investigations on the Structure of Water Glass with the Help of Ultrasonics (Issledovaniye stroyeniya zhidkogo stekla s pomoshch'yu ul'trazvuka)

PERIODICAL: Nauchnyye doklady vysshey shkoly, Khimiya i khimicheskaya tekhnologiya, 1958, Nr 1, pp. 161 - 163 (USSR)

ABSTRACT: The propagation velocity of ultrasonics in different liquids can be measured by means of the ultrasonic-interferometer. The coefficient of the adiabatic compressibility is computed by means of that velocity and the density of the liquid in question. The structure of the liquid is evaluated by the magnitude of this coefficient (Ref 1). The authors investigated sodium and potassium water glass of a different silica modulus of elasticity and of different density. The results are shown in table 1. Table 2 illustrates results of measurements in diluted solutions of sodium and potassium silicates of an equal specific density. The influence of the silica modulus of water glass on its compressibility is represented

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Investigations on the Structure of Water Glass by the Help of Ultrasonics

graphically in figure 1. Moreover, the dependence of the coefficient of the adiabatic compressibility of water glass on the silicate concentration was investigated by means of sodium tri- and disilicate samples formed in the lab. The results are shown graphically in figure 2. Henceforth it is seen that the dependence of the magnitude of the coefficient of compressibility of sodium water glass of a great silica modulus on the silicate concentration is of a linear character. The dependence of the compressibility of water glass on its density can be more easily expressed. For sodium tri- and disilicates the compressibility depends linearly on the density. The high propagation velocities of ultrasonics in solutions of water glass with great moduli (sodium and potassium) are marked by a rigidity of structure. The above mentioned measurements indicate, the higher the value of the silica modulus of water glass, i.e. the more the silico-hydrogen structure branches off the more it adopts a rigid character. The velocity of propagation of ultrasonics is greater in a dense sodium-disilicate-solution of $1,3 \text{ g/cm}^3$ than in a potassium-disilicate-solution of equal density.

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Investigations on the Structure of Water Glass by the Help of Ultrasonics

Accordingly, the compressibility of a sodium-disilicate-solution is less than that of a potassium-disilicate-solution. Consequently, the structure of sodium-disilicate is more rigid than that of potassium-disilicate. There are 4 figures, 2 tables, and 1 Soviet reference.

ASSOCIATION: Kafedra obshchey tekhnologii silikatov i kafedra fiziki Moskovskogo khimiko-tekhnologicheskogo instituta im. D. I. Mendeleyeva (Chair of the General Silicate-Technology and Chair of Physics of the Chemico-Technological Institute imeni D. I. Mendeleev, Moscow)

SUBMITTED: September 11, 1957

Card 3/3

AUTHOR: Tarasov, V. V.

SOV/76-02-9-44 16

TITLE: Common Features in the Structures of Semi-Conductors, High Polymers, and Glasses (The Chemical Aspect of the Theory of Semi-Conductors) (Obshchiye cherty v strukturakh poluprovodnikov, vysokopolimerov i stekol (Khimicheskiy aspekt teorii poluprovodnikov))

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol 32, Nr 9, pp 2221-2223 (USSR)

ABSTRACT: In addition to crystalline semi-conductors, such conductors in the glassy and liquid states have recently also been discovered. To the many non-crystalline semi-conductors belong many acid-free glasses which are prepared from melts of the sulfides, selenides, and tellurides of arsenic, antimony, and bismuth. Several such glasses correspond to the type A_2B_3 (A - arsenic, antimony, bismuth (III); B - sulfur, selenium, tellurium). In the laboratory of the author As_2S_3 was studied by Khuan-Ci-Khuay. This substance is in the glassy state at temperatures between 60° and 200° K, and resembles the structure of Sb_2S_3 .

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007/76-32-9-44/16

Common Features in the Structure of Semi-Conductors, High Polymers, and Glasses (The Chemical Aspect of the Theory of Semi-Conductors)

These non-crystalline semi-conductors may in the near future find practical application. There are 21 references, 9 of which are Soviet.

ASSOCIATION: Khimiko-tekhnologicheskii institut im. Mendeleyeva, Moskva
(Moscow Institute of Chemical Technology named Mendeleyev)

SUBMITTED: March 28, 1958

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5(2); 24(2,8)

PHASE I BOOK EXPLOITATION

SOV/2643

Tarasov, Vasil'y Vasil'yevich, Professor

Novyye voprosy fiziki stekla (New Problems in the Physics of Glass) Moscow, Gosstroyizdat, 1959. 269 p. Errata slip inserted. 2,000 copies printed.

Ed.: I. L. Glezarova; Tech. Ed.: P. G. Gilenson.

PURPOSE: This book is intended for scientists, teachers in schools of higher education, postgraduate students, and students in advanced courses dealing with problems of the structure of matter and particularly the structure of glass and semiconductors.

COVERAGE: The book reviews inorganic silicate, borate, phosphate, and some nonoxide glasses from the point of view of their high polymeric structures. Much of the text is devoted to high polymeric chain (linear) structure which, in the opinion of the author, is the structural basis of many inorganic glasses. These views are strengthened by an analysis of curves which express the temperature dependency of the heat capacity of glass. Data on volumetric compressibility measurements with the aid of ultrasound are also

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New Problems in the Physics (Cont.)

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given. Lastly, attempts are made to establish general characteristic structural features of high polymers, semiconductors, and glasses. N. A. Chernoplekov collaborated in the writing of Chapters II, III, IV and V. Work by the following assistants at the laboratory under the author's direction at the Moskovskiy khimiko-tekhnologicheskii institut imeni D. I. Mendeleeva (Moscow Institute for Chemical Technology imeni D. I. Mendeleev) was used in the book: A. V. Gladkov, I. V. Persianova, Ye. G. Ponedel'nikova, A. S. Savitskaya, Ye. F. Stroganov, Kh. B. Khokonov, and Huang Hsi-huai. The manuscript was prepared by L. M. Tarasova and V. A. Ratobyl'skaya. References are given at the end of each chapter.

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5(2)

SOV/156-59-1-2/54

AUTHORS:

Tarasov, V. V., Persianov, I. V.

TITLE:

The Compressibility of Ideal Solutions and Mixtures of Unassociated Liquids (Szhimayemost' ideal'nykh rastvorov i smesey neassotsiirovannykh zhidkostey)

PERIODICAL:

Nauchnyye doklady vysshey shkoly. Khimiya i khimicheskaya tekhnologiya, 1959, Nr 1, pp 8 - 12 (USSR)

ABSTRACT:

Ideal solutions or mixtures of liquids are distinguished by the additivity of the physical data of their components. The majority of nonideal solutions show a considerably higher deviation of compressibility than of volume. Therefore, the compressibility is a more significant criterion of the deviation from the ideal state. Deviations may be caused by: the weakening of the intermolecular forces and, in connection herewith, volume increase; the increase of intermolecular forces and volume reduction; structural changes in the liquid and greater density of the molecules; orientation disturbance of dipoles; loosening of the structure because of the orientation of the various molecules towards each other, but this orientation can be

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The Compressibility of Ideal Solutions and Mixtures of
Unassociated Liquids

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disturbed again by a temperature rise. The propagation velocity a of ultrasonics is an important quantity depending on the compressibility β and the density ρ of the liquid:

$$a^2 = \frac{1}{\rho\beta}$$

The equation for the ideal solution is:

$$\frac{1}{a_{id.}^2} = \frac{\varphi_1^2}{x_1} \frac{1}{a_1^2} + \frac{\varphi_2^2}{x_2} \frac{1}{a_2^2}$$

(x_1, x_2 = weight yield of the components, φ_1, φ_2 = volume yield of the components). This indicates that the velocity of sound shows a very complicated dependence on the composition even with ideal mixtures and, in general, is not additive

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($\frac{\gamma_1}{x_1} + \frac{\gamma_2}{x_2} \neq 1$). Therefore, the Rao constants are additive

only if mixtures are concerned the α and β values of which are close together. Deviations from the ideal state need not influence the Rao constants if the deviations of volume and sound velocity neutralize each other. For this reason the Rao constants cannot be used for the characterization of solutions. Diagrams show the compressibility of almost ideal solutions depending on the volume or molar yield of the components as well as the propagation velocity of ultrasonics. There are 4 figures and 15 references, 9 of which are Soviet.

ASSOCIATION: Kafedra fiziki Moskovskogo khimiko-tekhnologicheskogo instituta im. D. I. Mendeleyeva (Chair of Physics of the Moscow Institute of Chemical Technology imeni D. I. Mendeleev)

SUBMITTED: September 4, 1958

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TARASOV, V. V.

15(0),15(2)

AUTHOR:

Kolomiyets, B. T.,
Doctor of Technical Sciences

SOV/30-59-2-45/60

TITLE:

The Investigation of Vitreous Semi-Conductors
(Izucheniye stekloobraznykh poluprovodnikov)

PERIODICAL:

Vestnik Akademii nauk SSSR, 1959, Nr 2, pp 103-104 (USSR)

ABSTRACT:

From December 1 to 2, 1958 a conference took place on this problem at the Fiziko-tekhnicheskiy institut Akademii nauk SSSR (Physicotechnical Institute of the Academy of Sciences, USSR). It dealt with the discussion of the experiments carried out, mutual information on the course of experiments and their general coordination. Representatives from 11 scientific institutions attended the conference. The following lectures were heard: V. V. Tarasov, Moskovskiy khimiko-tekhnologicheskii institut (Moscow Chemicotechnological Institute) spoke of experimental results connected with the investigation of heat capacity at low temperatures of As_2S_3 and As_2Se_3 . His second report dealt with the polymeric concept of glass formation and semiconductors in general.

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R. L. Myuller, Gosudarstvennyy opticheskiy institut

The Investigation of Vitreous Semi-Conductors

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(State Optical Institute) emphasized the decisive role played by the covalent bond in glass formation.

A. A. Vaypolin, Institut khimii silikatov Akademii nauk SSSR (Institute of Silicate Chemistry of the AS USSR) described the investigation of the structure of the system $\text{As}_2\text{Se}_3\text{-As}_2\text{Te}_3$

by X-ray methods.

L. I. Tatarinova, Institut kristallografii Akademii nauk SSSR (Crystallographical Institute of the AS USSR) reported on the structural investigation of some chalcogenids by electron-diffraction.

A. I. Gubanov and V. Ye. Khartsiyev, Fiziko-tekhicheskiy Institut (Physicotechnical Institute) reported on theoretical problems of the semiconductor properties of glass types.

V. P. Shilo discussed working results in the determination of boundaries in glass formation in the As_2S_3 and As_2Se_3 systems.

N. A. Goryunova compared the boundaries of vitreous state in these systems with the criteria of glass formation obtained by Zakhariassen and Vinter-Kleyn and found that there exists no correlation between them.

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The Investigation of Vitreous Semi-Conductors

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T. F. Nazarova investigated the electric properties of semiconductor glass types in the $\text{TiSe} - \text{As}_2\text{Se}_3$ system.

B. T. Kolomiyets spoke of research work in the field of inner photoelectric effect done by T. N. Mamontova.

B. V. Pavlov discussed experimental results of the position of the absorption boundary as dependent on the change of composition of glass types.

V. P. Pozdnev reported on material he obtained in the investigation of the viscosity of glass types in the $\text{As}_2\text{Se}_3 - \text{As}_2\text{Te}_3$ system.

B. T. Kolomiyets summarized the working results obtained by the Physicotechnical Institute and found that in the materials investigated the short-range order is not changed in the transition from the vitreous into the crystalline state.

O. V. Mazurin, Leningradskiy khimiko-tekhnologicheskii institut (Leningrad Chemicotechnical Institute) described the investigation of the semiconductor properties of silicate and borosilicate glass types with the addition of iron-cobalt and titanium oxides.

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The Investigation of Vitreous Semi-Conductors

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N. V. Petrovykh, Moskovskiy institut elektrotekhnicheskogo stekla (Moscow Institute of Electrotechnical Glass) outlined the investigation results of the boundaries of glass formation and the electric properties of contiguous semiconductor glass types of the composition $V_2O_5 - P_2O_5 - R_xO_y$ (R- elements of the I, II, III, IV and V groups of the periodic system). The next conference on semi-conductor glass types will probably be held in 1959.

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SOV/156-59-2-4/48

10(1)

AUTHORS:

Persianova, I. V., Tarasov, V. V.

TITLE:

The Compressibility of Nonaqueous Solutions of Associated Components (Szhimayemost' nevodnykh rastvorov assotsirovannykh komponentov)

PERIODICAL:

Nauchnyye doklady vysshey shkoly. Khimiya i khimicheskaya tekhnologiya, 1959, Nr 2, pp 240-243 (USSR)

ABSTRACT:

The present investigation deals with mixtures of mono- and multivalent alcohols, i.e. with liquids of different character of association. Compressibility was measured by determining the density and the velocity of the propagation of ultrasound. In all cases considerable deviations of the compressibility from the additive values occurred. In the majority of the investigated cases the interaction of different molecules was less intensive than in the case of equal ones. Therefore, the negative deviations of compressibility are not due to an intensification of the intermolecular interaction but to a change in the structure of the solution. The results achieved by other authors (Refs 5-12) are discussed. In an investigation carried out together with Ye. G. Ponedel'nikova (Ref 13) it was found that the compressibility is in multi-

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valent alcohols essentially due to the hydrogen bonds, in the case of monovalent ones, however, to the dispersion interaction of hydrocarbon radicals. With the addition of a multivalent alcohol to a monovalent one the molecules of the monovalent alcohol from hydrogen bonds with the molecules to complicated aggregates. If the compressibility is compared in the case of an addition of different multivalent alcohols to monovalent ones it is found that the effect is approximately the same for all glycols. This may be explained by the fact that all of them are able to form the same number of hydrogen bonds. In the case of glycerin the compressibility is considerably higher which may be explained by the higher number of hydroxyl groups. In solutions with an excess quantity of multivalent alcohols it is noticeable that small additions of monovalent alcohols cause the same variation of compressibility. It may be assumed that the hydrogen bonds of the monovalent form bridges connecting the associates of glycerin or of the glycols and thus cause the negative deviation of compressibility. This formation of bridges may not only be due to hydroxyl groups but also to other oxygen

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The Compressibility of Nonaqueous Solutions of Associated Components

atoms which are able to form a bond with hydrogen. Thus, acetone shows the same effect as isopropyl alcohol. The mixtures of alcohols with nonpolar substances show considerable positive deviations from the Raoult law. It is very likely that in this case a loosening of the structure of the liquid occurs by an embedding of the molecules of the addition between the association chains. There are 4 figures and 16 references, 10 of which are Soviet.

PRESENTED BY: Kafedra fiziki Moskovskogo khimiko-tekhnologicheskogo instituta im. D. I. Mendeleyeva
(Chair of Physics, Moscow Institute of Chemical Technology imeni D. I. Mendeleev)

SUBMITTED: September 4, 1958

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24815
S/081/61/000/011/007/040
B105/B203

15 2510
AUTHOR:

Tarasov, V. V.

TITLE:

Glass as a polymer

PERIODICAL:

Referativnyy zhurnal. Khimiya, no. 11, 1961, 44, abstract
116316 (Stekloobrazn. sostoyaniya. M.-L.. AN SSSR. 1960,
78-90. Diskus., 98-112)

TEXT: The author gives a thorough critical survey of experimental and theoretical studies concerning the structure of glass as a polymer. According to their structure, the glasses are divided into two groups: band-chain glasses, and glasses with polymeric three-dimensional body. These glass groups differ very much as to their thermal and mechanical properties. The author indicates methods of giving the glasses requested properties on the basis of a combination of glasses of different groups. 23 references. [Abstracter's note: Complete translation.]

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IS 2120

1142 3109, 3309

23344 S/058 61/000/006/030 063
A001/A101

AUTHORS: Gladkov, A.V., Tarasov, V.V.

TITLE: An investigation of polymer structure of inorganic glasses

PERIODICAL: Referativnyy zhurnal. Fizika, no. 6, 1961, 223, abstract 6566 (V st.
"Stekloobrazn. sostoyaniye", Moscow-Leningrad, AN SSSR, 1960, 314 -
318, Discus. 343 - 344)

TEXT: In order to produce in glass-formation a covalent bond of polyhedra, disorderly bent in space, a certain freedom of changing bond valent angles is necessary, which is provided in silicate glasses by the O atom bonding two Si atoms. In this way, a polymer skeleton of inorganic glasses is formed. To elucidate the problem of polymer structure of glass, the authors investigated volumetric compressibility of silicate, borate and phosphate glasses by the ultrasonic method. The velocity of ultrasonic waves in sodium-silicate glasses decreases with increasing Na_2O concentration, which is explained by depolymerizing effect of Na_2O . The curve of ultrasonic velocity in phosphate glasses has a minimum at the composition in which the ratio of the number of O atoms to the cation number is equal to 2, this corresponds to sodium triphosphate or zinc metaphosphate. The data of IIR

Card 1/2

23344 S/C58/51/000/006/030/043
A001/A101

An investigation ...

Van Wazer ("J. Amer. Chem. Soc.", 1950, v. 72, 664) show that addition of chains and increase in compactness of chain packing, and consequently, increase of ultrasonic velocity, take place in trans-metaphosphate part of glasses investigated by him. Observations have shown that temperature dependence of ultrasonic velocity in molten quartz and glasses of zinc metaphosphate composition has an anomalous course. This phenomenon is explained by crosslinking of chains in the process of polymerization of ZnO_4 -tetrahedra to the phosphate chain skeleton. B_2O_3 plays a depolymerizing role with respect to the structure of glass-like silica and sodium-silicate glasses. The role of N_2O in borate glasses is opposite to its role in silicate glasses where it is a depolymerizer of the network. The velocity of ultrasonic waves in annealed glasses increases in comparison with that in hardened glasses; apparently the number of transverse crosslinkages increases in annealing, resulting in an increase of glass elasticity.

A. Yakhkind

[Abstracter's note: Complete translation]

Card 2/2

28305

S/081/61/000/016/008/040
B118/B101

15.8180

AUTHORS:

Romanovskiy, V. A., Tarasov, V. V.

TITLE:

Structure of the sulfides of the elements of group V of
Mendeleev's periodic system and their tendency to vitrifica-
tion

PERIODICAL:

Referativnyy zhurnal. Khimiya, no. 16, 1961, 43, abstract
16 290 (Sb. "Stekloobrazn. sostoyaniye". M.-L., AN SSSR,
1960, 474-478. Diskus., 478-479)

TEXT: On the basis of the conceptions of the polymeric structure of glass,
the authors verify the assumption that the tendency of inorganic polymers
to vitrification is the stronger, the more covalent is the polymeric bond
and the greater is the kinematic freedom of the structural skeleton in the
crystalline state referred to the deformation of the valence angles and to
the torsions of the atomic groups relative to the polymeric bonds. The
suggestion is made to characterize this freedom by the average coordination
number (or average polymer number) of the atom in the polymer lattice site.
The data obtained for the specific heats of As_2S_3 , Sb_2S_3 , and Bi_2S_3 at

Card 1/2

28395
S/081/61/000/016/008/040
B118/B101

Structure of the sulfides ...

low temperatures (RZhKhim., 1961, 2E235; 5E289) are compared with values obtained from V. V. Terasov's equations. In the authors' opinion, the satisfactory agreement confirms the correctness of the conceptions of the dynamic isolation of macromolecules. From the crystalline structure and the interrelations of the force factors, it was concluded that the metallic character of bonds increases in the sequence As_2S_3 , Sb_2S_3 , and Bi_2S_3 . It was found that the kinematic rigidity of the structural skeletons of As_2S_3 , Sb_2S_3 , and Bi_2S_3 is expressed by the "average polymer coordination numbers" 2.4; 2.5; 5.6, respectively. The difference in the ability of the compounds investigated to form glass is explained by the causes mentioned above. [Abstracter's note: Complete translation.]

X

Card 2/2

TARASOV, V.V.

"Makrofol." Plast. massy no.8:78-79 '60. (MIRA 13:10)
(Germany, West--Electric insulators and insulation)

81649

S/181/60/002/06/39/050
B006/B056

24.7600

AUTHORS:

Romanovskiy, V. A., Tarasov, V. V.

TITLE:

The Specific Heat of Arsenic-, Antimony-, and Bismuth
Trisulfides in Connection With Their Structure and Their
Physical and Chemical Properties

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 6, pp. 1287 - 1293

TEXT: In the introduction, the authors describe the results obtained by investigations of Ito (Ref. 1) and a manifold of details of the As_2S_3 structure and the chemical bond. On the basis of Figs. 1-3, structure, types of bond, and their transitions (s, p, sp, sp_2 , sp_3) are studied, and the results, above all with respect to the interatomic distances, obtained by various authors are compared. In part 2 of the paper, experimental and theoretical results obtained by determining the specific heat are compared. The results of specific heat measurements carried out at low temperatures (Ref. 12) were evaluated by means of formulas obtained by Tarasov in Ref. 11, and satisfactory agreement was found. Tables 1-3

Card 1/3

81649

The Specific Heat of Arsenic-, Antimony-, and
Bismuth Trisulfides in Connection With Their
Structure and Their Physical and Chemical Properties

S/181/60/002/06/39/050
B006/B056

give the specific heats of As_2S_3 , Sb_2S_3 , and Bi_2S_3 for various temperatures. In part 3 of the paper, the characteristic temperature and some properties of chain crystals are discussed. The force coefficients β (of the simplest, straight, and monatomic chains) and k (of the double bond in diatomic molecules) are studied, and some results are compared with those obtained by Western authors, and a number of Western data were published (Tables 4-6). The authors then pass over to semiconductor properties, and the theory by A. F. Ioffe concerning the part played by the short-range order and the connection between the semiconductor properties and the interaction character of neighboring atoms is discussed. According to Ref. 18, it is assumed that the semiconductor properties of matter are connected with the presence of predominantly covalent bonds. Figs. 4 and 5 show the dependence of the width of the forbidden band ΔE (in eV) on β for impurity sulfides and semiconductors of the germanium series (the ΔE values are taken from Ref. 19 and G. I. Rekalova - Ref. 3). These functions are found to take an analogous course for both series of compounds; they are linear in first

X

Card 2/3

81649

The Specific Heat of Arsenic-, Antimony-, and
Bismuth Trisulfides in Connection With Their
Structure and Their Physical and Chemical Properties

8/181/60/002/06/39/050
B006/B056

approximation. Finally, some results obtained by N. N. Sirota (Ref. 20) are discussed. Table 7 gives the melting points and ΔE of S, Se, and Te; as may be seen, the width of the forbidden band decreases for these elements with increasing melting point (for the elements of the germanium series the relations are reversed). B. K. Vaynshteyn and V. F. Dvoryankin (Ref. 8) are mentioned. There are 5 figures, 7 tables, and 20 references: 9 Soviet, 4 American, 1 Japanese, and 5 German.

ASSOCIATION: Khimiko-tekhnologicheskii institut im. D. I. Mendeleyeva,
Kafedra fiziki, Moskva (Institute of Chemical Technology
imeni D. I. Mendeleyev, Chair of Physics, Moscow)

SUBMITTED: July 14, 1959

X

Card 3/3

5.4700

81650

S/181/60/002/06/40/050
B006/B056

AUTHORS:

Romanovskiy, V. A., Tarasov, V. V.

TITLE:

The Low-temperature Specific Heat and the Entropy at 298.1°K of Sulfides of the Elements of the Fifth Group of the Periodic System by D. I. Mendeleyev

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 6, pp. 1294 - 1299

TEXT: The authors measured the specific heat within the range of from 65 to 300°K by means of an adiabatic calorimeter. The calorimeter ampoule used is shown in cross section in Fig. 1, and is described in the introduction. Fig. 2 shows the circuit used to measure the current capacity, which is also described in detail; the errors that may occur in the individual components of the circuit are mentioned. The total relative error in measuring the specific heat is found not to exceed 0.33 %. The results obtained by control tests were compared with American data (Table 1), and were found to be satisfactory. The measurements themselves were carried out on polymeric crystalline modifications of sulfides; for the purpose of determining the specific heat of As_2S_3 and Sb_2S_3 , the minerals orpiment and

Card 1/2

81650

The Low-temperature Specific Heat and the Entropy $S/181/60/002/06/40/050$
at 298.1°K of Sulfides of the Elements of the B006/B056
Fifth Group of the Periodic System by
D. I. Mendeleyev

antimonite were used as well as an amorphous powder of Bi_2S_3 , the further treatment of which is described. The results obtained by measuring the specific heats (c_p) of the investigated crystalline samples of As_2S_3 , Sb_2S_3 , and Bi_2S_3 are given in Tables 2, 3, and 4, and Table 5 gives the entropy values. For the calculation of entropy equations obtained by V. V. Tarasov were used (for extrapolation to 0°K). The errors are about 4 %. Ye. S. Itskevich and Ye. F. Stroganov are mentioned. There are 2 figures, 5 tables, and 5 references: 4 Soviet.

ASSOCIATION: Khimiko-tekhnologicheskii institut im. D. I. Mendeleyeva,
Moskva (Institute of Chemical Technology im. D. I. Mendeleyev
Moscow)

SUBMITTED: July 14, 1959

Card 2/2

PERSIANOVA, I.V.; TARASOV, V.V.

Compressibility of aqueous solutions of nonelectrolytes. Izv.vys.
ucheb.zav.; khim.i khim tekhn. 3 no.1:4-7 '60. (MIRA 13:6)

1. Moskovskiy khimiko-tekhnologichesky institut imeni D.I.
Mendel'eyeva, kafedra fiziki.
(Alcohols) (Compressibility)

TARASOV, V.V.

Rupture strength of liquids. Izv.vys.ucheb.zav.;khim.i khim.tekh.
4 no.3:520 '61. (MIPA 14:10)

1. Moskovskiy khimiko-tekhnologicheskii institut imeni
Mendeleeva.
(Liquids)

ZVORYKIN, A.Ya.; PEREL'MAN, F.M.; TARASOV, V.V.

Molybdenum and tungsten sulfides and oxysulfides. Zhur.neorg.khim.
6 no.9:1994-1998 S '61. (MIRA 14:9)

1. Institut obshchey i neorganicheskoy khimii im. N.S.Kurnakova
Akademii nauk SSSR.
(Molybdenum sulfide) (Oxysulfides)

PEREL'MAN, F.M.; ZVORYKIN, A.Ya.; TARASOV, V.V.; DEMINA, G.A.

Thio salts of molybdenum and tungsten. Zhur.neorg.khim. 6 no.9:
1999-2002 S '61. (MIRA 14:9)

1. Institut obshchey i neorganicheskoy khimii im. N.S.Kurnakova
AN SSSR.

(Molybdates) (Tungstates) (Systems (Chemistry))

TARASOV, V.V.

~~Inorganic high polymers and new physical methods for their study.~~
Trudy MKHTI no.37:11-31 '62. (MIRA 16:12)

TARASOV, V.V.; RATOBYL'SKAYA, V.A.

Thermal polymerization and depolymerization of glasslike arsenic
trisulfide. Trudy MKHTI no.37:99-105 '62. (MIRA 16:12)

ACCESSION NR: AP3001579

S/0191/63/000/006/0026/0029

AUTHOR: Akutin, M. S.; Kotrelov, V. N.; Kovarskaya, B. M.; Kostryukova, T. D.;
Tarasov, V. V.; Sidnev, A. I.; Rodin, E.; Nitcha, O. N.; Neyman, M. B.

TITLE: Casting of polycarbonates under pressure.

SOURCE: Plasticheskiye massy, no. 6, 1963, 26-29

TOPIC TAGS: Diflon, polycarbonate, thermal oxidation

ABSTRACT: The change in molecular weight and mechanical properties of a polycarbonate "Diflon" under laboratory oxidation and on pressure-casting was studied. Polycarbonates are destroyed more rapidly by pressure casting than by thermal oxidation. Apparently, this acceleration is combined with the presence of mechanical destruction. The minimum amount of time and temperature for transforming the polymer to the viscous-flowing state should be used in order to reduce the extent of destruction. Orig. art. has: 9 figures, 1 table and 1 equation.

ASSOCIATION: none

SUBMITTED: 00

DATE ACQ: 01Jul63

ENCL: 00

~~CONFIDENTIAL~~

ACCESSION NR: AR4015645

S/0081/63/000/022/0384/0384

SOURCE: RZh. Khimiya, Abs. 22L93

AUTHOR: Yagodin, G. A.; Pushkov, A. A.; Tarasov, V. V.

TITLE: Separation of zirconium and hafnium by extraction in a packed pulsating column

CITED SOURCE: Tr. Mos. khim.-tekhnol. in-ta im. D. I. Mendeleyeva, vytp. 40, 1963, 142-144

TOPIC TAGS: zirconium, hafnium, chromatography, column chromatography, zirconium purification, pulsating column

TRANSLATION: A good degree of purification of Zr from Hf can be obtained by extraction with a 10% solution of diisoamylmethylphosphinate in kerosene on a packed pulsating column. N. Shiryayeva

DATE ACQ: 07Jan64

SUB CODE: CH

ENCL: 00

Card: 1/1

ACCESSION NR: AR4040829

S/0058/64/000/005/E067/E067

SOURCE: Ref. zh. Fizika, Abs. 5E502

AUTHOR: Mel'nikov, G. S.; Tarasov, V. V.

TITLE: The hardness of simple compounds

CITED SOURCE: Tr. Mosk. khim.-tekhnol. in-ta im. D. I. Mendeleyeva, vy*p. 41, 1963, 5-7

TOPIC TAGS: hardness, oscillation, oscillation zero point energy, lattice, simple compound

TRANSLATION: There is introduced a new criterion of harness--the zero-point energy of oscillations of atoms of the lattice

$$E_0 = \int_0^{\infty} g(\nu) (h\nu/2) d\nu,$$

Card 1/2

ACCESSION NR: AR4040829

where $g(\nu)$ — distribution function of frequencies ν , where it is assumed that the greater E_0 , the greater the hardness. There is obtained good coincidence between E_0 and experimentally measured hardness for a number of elements (Li, Na, K, Be), oxides, and alkali-halide compounds.

SUB CODE: SS

ENCL: 00

Card 2/2

MERTSLIN, R.V.; TARASOV, V.V.; NIKURASHINA, N.I.

Characteristics of the layer separation field in ternary
transition type systems. Part 3. Zhur. ob. khim. 33 no.8:
2435-2440 Ag. '63. (MIRA 16:11)

1. Saratovskiy gosudarstvennyy universitet.

L 52562-65 EWT(m)/EWP(1)/EWP(2)/EWP(3)/EWP(4) Pg-4 WE

UR/2539/63/000/044/0008/0009

ACCESSION NR: AT5012662

AUTHOR: Tarasov, V. V., Yunitskiy, G. A.

TITLE: The speed of sound in alkali-borate glasses and their adiabatic compressibility

SOURCE: Moscow. Khimiko-tekhnologicheskii institut. Trudy, no. 44, 1963. Issledovaniya v oblasti fizicheskoy khimii, analiticheskoy khimii i elektrokhemii (Research in the field of physical chemistry, analytical chemistry and electrochemistry): 8-9

TOPIC TAGS: ultrasound propagation, sound speed, alkali borate glass, glass compressibility, adiabatic compressibility, glass structure

ABSTRACT: An analysis of the structural changes taking place when an alkali oxide is added to boric anhydride shows that, as the concentration of the alkali oxide increases to 25 mole %, three-dimensional cross-linking of the B_2O_3 skeleton takes place which is due to the formation of additional oxygen bridges between the oxygen atom and two adjacent boron atoms. Above 25 mole %, the coordination number of boron changes from three to four. Since changes in the velocity of ultrasound and adiabatic compressibility are very sensitive to structural changes, the authors measured the velocity of ultrasound in lithium borate glasses. The measurements were made with a piezoelectric quartz resonator whose

Card 1/3

L. 52562-65

ACCESSION NR: AT5012662

natural frequency $f_1 = 136925$ cps. The ultrasonic measurements (see Fig. 1 of the Enclosure) confirmed the fact that three-dimensional cross-linking increased with increasing concentration of the alkali oxide, in this case Li_2O . Orig. art. has: 2 figures and 1 formula.

ASSOCIATION: Moskovskiy khimiko-tekhnologicheskii institut (Moscow Chemical Engineering Institute)

SUBMITTED: 00

ENCL: 01

SUB CODE: MT,GP

NO REF SOV: 002

OTHER: 002

Card 2/3

L 52562-65
ACCESSION NR: AT5012662

ENCLOSURE: 01
0

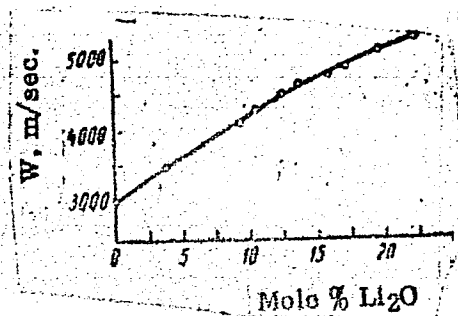


Figure 1. Velocity of ultrasound in lithium-borate glasses.

Card 3/3 *myb*

YACOBIN, G.A.; PUSHEOV, A.A.; TARASOV, V.V.

Separation of zirconium and hafnium by means of extraction in
a pulsed packed tower. Trudy MKHTI no.40:142-144 '63.
(MIRA 18:12)

ACCESSION NR: AR4034492

S/0058/64/000/003/H055/H055

SOURCE: Ref. zh. Fiz., Abs. 3Zh385

AUTHORS: Yunitskiy, G. A.; Tarasov, V. V.

TITLE: Determination of the velocity of ultrasound in matter by the compound resonator method

CITED SOURCE: Tr. Mosk. khim.-tekhnol. in-ta im. D. I. Mendeleyeva, vy*p. 41, 1963, 10-13

TOPIC TAGS: ultrasound propagation velocity, compound resonator, quartz crystal oscillation, resonator resonant frequency

TRANSLATION: One of the methods of determining the velocity of ultrasound in a solid by the method of the compound resonator is described. The use of double compound resonator makes it possible to avoid precision adjustment of the lengths of the specimens to satisfy

Card 1/2

ACCESSION NR: AR4034492

the condition $f \approx f_1 \approx f_2 \approx f_3$, which must be satisfied when a triple compound resonator is used (f -- resonant frequency of the compound resonator, f_1 -- natural frequency of the quartz crystal, f_2 -- natural frequency of the sound-conducting rod, and f_3 -- natural frequency of the specimen). In the case of a double compound resonator, measurements of two successive values of the resonant frequency of the compound resonator, f' and f'' , yield the values of the natural frequencies of the specimen f'_3 and f''_3 , after which the ratio $f'_3/n' = f''_3/(n' + 1)$ is used to determine the number of half waves which fit along the specimen at both oscillation frequencies. Thus, the velocity of ultrasound for any specimen length can be determined from two readings of the resonant frequencies of the compound resonator. V. Cherpak.

DATE ACQ: 10Apr64

SUB CODE: PH

ENCL: 00

Card 2/2

L 2105-65 EWT(m)/EWP(q)/EWP(b) Pq-4 AS(mp)-2/ESD(t)/RAEM(t) WH
ACCESSION NR: AR4039921 S/0058/64/000/004/E012/E012
SOURCE: Ref. zh. Fiz., Abs. 4884 17
AUTHORS: Semenov, L. V.; Tarasov, V. V.
TITLE: Diamagnetic anisotropy and polymer structure of alkali-
borate glasses
CITED SOURCE: Tr. Mosk. khim. -tekhnol. in-ta im. D. I. Mendeleeva,
vy*p. 41, 1963, 104-106
TOPIC TAGS: diamagnetism, anisotropy, polymer structure, borate
glass, potassium compound, polymer chain
TRANSLATION: The Krishnan oscillation method is used to investigate
the diamagnetic anisotropy of potassium-borate glasses, and it is
shown that when K_2O content of the glass is increased, the anisotropy
decreases and disappears completely at a concentration ~20 mol.%.
It is assumed that introduction of K_2O contributes to the occurrence

Cord 1/2

L 2105-65

ACCESSION NR: AR4039921

of an oxygen bridge between the polymer chains of B_2O_3 , leading to the formation of a three-dimensional structure. V. Zelentsov.

SUB CODE: GP, OP ENCL: 00

Card 2/2

L 36366-66 EWT(m)/EWP(e) WH/WW

ACC NR: AR6012426

SOURCE CODE: UR/0081/65/000/020/B050/B050

38
B

AUTHOR: Tarasov, V. V.

TITLE: Polymer structure of boric anhydride and sodium borate glasses

SOURCE: Ref. zh. Khimiya, Abs. 20B314

REF SOURCE: Sb. Stekloobrazn. sostoyaniye. T. 3. Vyp. 4. Minsk, 1964. 112-119

TOPIC TAGS: polymer structure, borate glass, fiber glass, magnetic anisotropy, oxygen, polymer cross linking

ABSTRACT: The structure of B_2O_3 and alkaline borate glasses is analyzed. Comparison of softening points, compressibility, coefficient of linear expansion, and mechanical losses of B_2O_3 and SiO_2 indicates a small spacial three-dimensional coherence of the B_2O_3 frame. The above and the effects of diamagnetic and optical anisotropy of glass fiber from pure B_2O_3 can be used as a base for describing the polymer structure of B_2O_3 . A structural diagram of B_2O_3 including six-member boroxale rings, is presented. The addition of the Na_2O to the pure

Card 1/2

L 36366-66

ACC NR: AR6012426

B₂O₃ produces a change in the coordination of B₃→B₄. If the content of Na₂O ≤ 25 mol %, the change in coordination is accompanied by three-dimensional crosslinking because of the formation of additional oxygen bridges. When less than 25 mol % Na₂O is introduced into the glass, the transition B₃→B₄ proceeds without the additional three-dimensional crosslinking of the skeleton, because incorrect boroxxygen tetrahedrons are created and because one of the oxygen atoms is not bridging but lateral. When the glass contains a great amount of Na₂O (more than 45 mol %), the disintegration of the B₂O₃ skeleton can take place, proceeding in the same way as in silicate glasses. V. Pavlovskiy.
[Translation of abstract] [NT]

SUB CODE: 11,07

Card 2/2

TARASOV, V.V.; YUNITSKIY, G.A.

Data processing on the quantum theory of the heat capacity of chain structures. Trudy MKHTI no.44:5-7 '64. (MIRA 18:1)

Velocity of sound in alkali borate glasses and their adiabatic compressibility. Ibid.:8-9

TARASOV, V. V.; BARTENEV, G. M.; YEREMEYeva, A. S.; RATOBYSKAYA, V. A.

3

"On polymeric nature of vitreous arsenic trisulfide."

report submitted for 4th All-Union Conf on Structure of Glass, Leningrad,
16-21 Mar 64.

TARASOV, V. V.

"Spatially - polymeric, chain and electronic structure of some inorganic glasses."

report submitted for 4th All-Union Conf on Structure of Glass, Leningrad,
16-21 Mar 64.

L 41604-65 EWT(m)/EWP(j) Pc-4 RM
ACCESSION NR: AR5005643

S/0081/64/000/022/S039/S039

SOURCE: Ref. zh. Khimiya, Abs. 22S234

AUTHOR: Kotrelev, V.N.; Kostryukova, T.D.; Besfamil'nyy, I.B.; Tarasov, V.V.

TITLE: The properties, processing and use of polycarbonates 15

CITED SOURCE: Sb. Primeneniye plast. mass v mashinostr. i priborostr. Minsk, 1964, 163-172

TOPIC TAGS: polycarbonate synthesis, polycarbonate mechanical property, polycarbonate working, radio part manufacture, phosgene, transesterification, diphenyl carbonate/Diflon polycarbonate

TRANSLATION: The "Diflon" brand of polycarbonate can be obtained by the direct reaction of dihydroxy compounds with phosgene or by the transesterification of diphenyl carbonate with diphenylolpropane. Diflon has a molecular weight of up to 200,000, a specific gravity of 1.2, a density in dry granular form of 650 g/liter, and a processing temperature interval of 220-320C. The specific impact toughness of Diflon is 400-500 kg-cm/cm²; the tensile, compressive and bending strength are 600-700, 800-900 and

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L 41604-65

ACCESSION NR: AR5005643

1000-1100 kg/cm², respectively; and the Martens heat resistance is 135-140C. Diflon does not show cold fluidity and can be used in the temperature range from -100 to +130C; it is a self-quenching, chemically stable material. Diflon can be worked on casting machines (casting pressures of 1500-2200 kg/cm²) or extruders, and can also be subjected to mechanical processing. Diflon is recommended for use in the manufacture of construction parts and the parts of electrical and radio equipment. Z. Ivancva

ENCL: '00

SUB CODE: MT, OC

ml
Card 2/2

L 12889-66 EWP(e)/EWT(m)/EWP(b) WH

ACC NR: AT6000486

SOURCE CODE: UR/0000/65/000/000/0167/0171

AUTHOR: Tarasov, V. V.; Bartenev, G. M.; Yeremeyeva, A. S.; Ratobyl'skaya, V. A.

ORG: None

TITLE: Polymeric character of vitreous arsenic trisulfide 15.44

SOURCE: Vsesoyuznoye soveshchaniye po stekloobraznomu sostoyaniyu. 4th, Leningrad, 1964. Stekloobraznoye sostoyaniye (Vitreous state); trudy soveshchaniya. Leningrad, Izd-vo Nauka, 1965, 167-171 51 B+1

TOPIC TAGS: arsenic compound, sulfide, glass property, thermomechanical property, polymer

ABSTRACT: Specially heat-treated vitreous arsenic trisulfide was studied by the resonance method, in which the value of the resonance frequency characterizes the elastic properties, and the width of the resonance peak shows the magnitude of the dissipative forces. The measurements were taken at 136.6 kc at room temperature. All the samples were characterized by an exceptionally high compressibility (av. 6.2×10^{-12} cm²/dyne), and the effect of the thermal past on the volume compressibility was insignificant. This high compressibility is attributed to a pronounced heterodynamism, which is apparently due to the fact that the basic structure of vitreous As₂S₃ consists of chain formations bound by relatively weak forces, and the compression takes place primarily at the site of weak bonds.

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L 12889-66

ACC NR: AT6000486

The dependence of the internal friction on the thermal past of the glass was determined, thermomechanical curves for As_2S_3 were plotted, and the temperature dependence of the elongation and coefficient of thermal expansion was studied. The data show vitreous As_2S_3 to be a genuine polymeric material. Orig. art. has: 5 figures.

SUB CODE: 11/ SUBM DATE: 22May65/ ORIG REF: 002

07/

Card

2/2

NW

TARASOV, V.V.

Introducing an automatic program-controlled temperature
regulator. Biul.tekh.-ekon.inform.Gos.nauch.-issl.inst.nauch.
i tekhn.inform. 18 no.11:13-14 N '65.

(MIRA 18:12)

TARASOV, V.V.; YUNITSKIY, G.A.

Theory of the heat capacity of chain link and laminated
structures. Zhur. fiz. khim. 39 no.8:2077-2080 Ag '65.
(MIRA 18:9)

1. Moskovskiy khimiko-tekhnologicheskij institut imeni
Mendeleyeva.

L 42881-66 EWP(e)/EWT(m) WH

ACC NR: AP6022895

SOURCE CODE: UR/0078/66/011/004/0931/0933

AUTHOR: Turdakin, V. A.; Tarasov, V. V.

ORG: none

TITLE: Heat capacity of boric anhydride and sodium borate glasses at low temperatures

SOURCE: Zhurnal neorganicheskoy khimii, v. 11, no. 4, 1966, 931-933

TOPIC TAGS: borate glass, boron compound, heat capacity

ABSTRACT: In order to confirm experimentally the authors' theory on the "vulcanizing" role of oxygen atoms introduced into the structure of glass along with an oxide modifier, the low-temperature heat capacity of vitreous B_2O_3 and glasses of the $Na_2O-B_2O_3$ system in the range of low Na_2O concentrations was measured. The assumption was that the varying degree of three-dimensional cross-linking of the glass-forming framework should be reflected in the spectrum of distribution of natural vibration frequencies of the framework and by the heat capacity curve at low temperatures (55-300°K). The glasses had the following composition:

glass No. 1: 7.87 mole % Na_2O , 92.13 mole % B_2O_3 ;
glass No. 2: 13.70 mole % Na_2O , 86.30 mole % B_2O_3 ;
glass No. 3: 21.09 mole % Na_2O , 78.91 mole % B_2O_3 .

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UDC: 536.63:546.273-31+536.63:546.33*273-161.6

L 42881

ACC NR: AP6022895

The experimental values obtained at 31 temperatures between 59.6 and 295.0°K are tabulated. Analysis of these values, based on the theory of the heat capacity of heterogeneous structures, indicates a decrease in the heat capacity of the polymer framework of Na₂O-B₂O₃ glasses with increasing Na₂O concentration. This confirms the hypothesis that three-dimensional cross-linking takes place upon introduction of an oxide modifier into the glass. Orig. art. has: 1 table.

SUB CODE: 07,11/SUBM DATE: 26May65/ ORIG REF: 008/ OTH REF: 006

Card 2/2 *ldh*

L 16131-66 EWT(m)/EWP(e) WH
ACC NR: AP6004183

SOURCE CODE: UR/0076/66/040/001/0148/0152

AUTHOR: Yunitskiy, G. A.; Tarasov, V. V.

ORG: Moscow Chemical Engineering Institute im. D. I. Mendeleyev (Moskovskiy khimiko-tekhnologicheskii Institut)

TITLE: Changes in the structure and compressibility of alkali borate glasses with changing content of alkali metal oxide

SOURCE: Zhurnal fizicheskoy khimii, v. 40, no. 1, 1966, 148-152

TOPIC TAGS: potassium compound, glass property, borate glass, ultrasonic velocity, alkali metal oxide, polymer structure, molecular structure
ABSTRACT: Experimental data were obtained for the velocity of ultrasound in potassium borate glasses as a function of the alkali metal oxide content in the range from 0 to 25 mole %. The adiabatic compressibility of this series of glasses was calculated. The course of the compressibility curves provides further support for the polymer theory of glass, which correlates changes in the properties of alkali borate glass during changing concentration of alkali metal oxide with the process of three-dimensional cross-linking of

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UDC: 541.20

L 16131-66

ACC NR: AP6004183

0

the glass skeleton. At a low R_2O content, this cross-linking is due to the formation of oxygen bridges between boron atoms belonging to different boron-oxygen chains. A theoretical interpretation of the dependence of the fraction of boron atoms having fourfold coordination in alkali borate glass on the concentration of the modifying oxide is given. Orig. art. has: 3 figures and 11 formulas.

SUB CODE: 07, 11/ SUBM DATE: 20Oct64/ ORIG REF: 006/OTH REF: 012

Card 2/2

L 01093-67 EWP(k)/EWT(l)/EWT(m)/T/EWP(e) WH
ACC NR: AR6023280

SOURCE CODE: UR/0058/66/000/003/0009/0010
4/8 15

AUTHOR: Gladkov, A. V.; Tarasov, V. V.; Yunitskiy, G. A.

TITLE: Velocity of ultrasound and compressibility in lead-borosilicate glasses

SOURCE: Ref zh. Fizika, Abs. 3E68

REF SOURCE: Sb. Primeneniye ul'traakust. k issled. veshchestva. Vyp. 20, M., 1964, 181-185

TOPIC TAGS: glass property, ultrasonic velocity, silicate glass, borate glass

ABSTRACT: Measurements were made of the velocity of ultrasonic waves by the resonance method at frequency ~136 kcs. The velocity of sound in lead-borosilicate glasses first decreases with increasing content of B_2O_3 , i.e., the structure of the lead-borate component becomes stronger and joining together of the silicon-oxygen framework develops, after which the velocity decreases as a result of the transition of the boron atoms from the triple coordination into the quadrupole coordination. The compressibility of borate glasses as a function of the B_2O_3 concentration passes through a minimum, and that of lead-silicate glass increases smoothly with increasing of lead oxide in it. P. Bokin. [Translation of abstract]

SUB CODE: 11

kh

Card 1/1

L 06510-67 EWT(m)/EWP(j) RM

ACC NR: AP7000482

SOURCE CODE: UR/0079/66/036/006/1124/1129

NIFANT'YEV, E. Ye., TUSEYEV, A. P., TARASOV, V. V.

"Colamine Glycophosphites and -Phosphonites"

Moscow, Zhurnal Obshchey Khimii, Vol 36, No 6, 1966, pp 1124-1129

Abstract: The phosphorylation of colamine and N-methylcolamine by tetraethyl-diamides of methyl- and ethylphosphonous acids was studied. The amido-esters obtained were used to phosphorylate carbohydrates: 1,2-3,4-diisopropylidenegalactose, containing a free primary hydroxyl, and 1,2-5,6-diisopropylidenglucose, containing a free secondary hydroxyl group, thereby synthesizing the corresponding colamine glycophosphonites. Colamine glycophosphites were synthesized from diamidoglycophosphites, such as the tetraethyldiamidophosphite of 1,2-5,6-diacetoneglucose, and the colamine derivative, forming cyclic glycoethylenemethylamidophosphites, which reacted with various alcohols to form neutral colamine glycophosphites. The infrared spectra and other properties of the compounds obtained, including a promising Arbuzov reaction, were studied. Orig. art. has: 2 figures and 3 tables. [JPRS: 37,023]

TOPIC TAGS: phosphorylation, organic phosphorus compound

SUB CODE: 07 / SUBM DATE: 25Feb65 / ORIG REF: 008 / OTH REF: 001

Card 1/1 LS

UDC: 547.26'118

L 06979-67 EWT(m) JR
ACC NR: AP6018354 (N) SOURCE CODE: UR/0089/66/020/005/0424/0424

AUTHOR: Kasanskiy, Yu. A.; Kukhtevich, V. I.; Popov, V. I.; Tarasov, V. V.;
Shemetenko, B. P. 4/B

ORG: none

TITLE: Dependence of the buildup factor on the location of the detector behind
the shield 14

SOURCE: Atomnaya energiya, v. 20, no. 5, 1966, 424

TOPIC TAGS: reactor shielding, gamma scattering, gamma detection, scintillation
detector

ABSTRACT: This is an abstract of article No. 76/3559, submitted to the editor and
filed, but not published in full. Inasmuch as earlier investigations of the build-
up factors, with the aid of which account is taken of the scattered gamma radia-
tion, were made for observation points situated either inside or on the surface of
the shield, the authors measured the accumulation factors with a radioactive source
of gamma radiation (Cs137) at different positions of the detector and the source
behind an aluminum barrier of thickness equal to 2.8 mean free paths and of diameter

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UDC: 539.122:539.121.72

L 06979-67

ACC NR: AP6018354

40 cm. The measurements were made with a scintillation detector (stilbene crystal). The distance from the source to the shield surface facing the detector ranged from 18 to 150 cm. For each value of this distance, the distance from the surface of the shield to the detector was varied from 0 to 500 cm. The results show that the decrease of the accumulation factor with increasing distance R has the form $(1/\sin\theta)\exp(-k_p\theta)$ for a point-like isotropic source on the surface of the shield, and the form $\exp(-k_p\theta)$ for a plane parallel beam. The test results were compared with values calculated in accordance with a semiempirical procedure described by the authors earlier (Byulleten' Informatsionnogo tsentra po yadernym dannym [Bull. of Information Center on Nuclear Data] no. 2, Atomisdat, 1965, p. 305. Orig. art. has: 1 figure.

SUB CODE: 18

SUBM DATE: 30Dec65/

ORIG REF: 002

OTH REF: 002

Card 2/2

Ref

L 05380-67 ^{ENT(m)} JP/SE
ACC NR: AT6027939

SOURCE CODE: UR/0000/66/000/000/0206/0209

AUTHOR: Degtyarev, S. F.; Kukhtevich, V. I.; Tarasov, V. V.

29
B+

ORG: None

TITLE: Experimental study of the propagation of thermal neutrons close to the source in the unbounded atmosphere

SOURCE: Voprosy fiziki zashchity reaktorov (Problems in physics or reactor shielding); sbornik statey, no. 2. Moscow, Atomizdat, 1966, 206-209

TOPIC TAGS: thermal neutron, neutron distribution, fast neutron, neutron scattering

ABSTRACT: The density of thermal neutrons is experimentally studied to provide data for computing capture γ -radiation in air. A Po-Be fast neutron source was used in a paraffin block having walls 20 cm thick. Thermal neutrons are taken as those with an energy below the cadmium threshold $E < 0.4$ Mev and neutrons with greater energies are called fast neutrons. An ¹⁰B-SNM-0 boron counter⁰ was used for measuring the density of thermal neutrons. The source and detector were located at an altitude of 60 m to eliminate the effect of neutrons scattered from the earth. Three quantities were measured directly: 1. the density of neutrons throughout the entire spectrum escaping from the paraffin block; 2. the density of thermal neutrons formed from the fast neutrons; 3. the density of fast neutrons escaping from the source and propagated in the

Card 1/2

L 05300-67

ACC NR: AT6027939

atmosphere. The results show that the fraction of thermal neutrons produced by attenuation in the atmosphere is small in comparison with the thermal neutrons for the given spectrum. A comparison of experimental and theoretical data for thermal neutron distribution shows excellent agreement at a source temperature of 293°K with some discrepancy when the source temperature is increased to 440°K. Experimental error is less than 6-10%. This discrepancy between experimental and theoretical data is not understood and requires further study. Orig. art. has: 2 figures, 1 table, 2 formulas.

SUB CODE: 18/ SUBM DATE: 12Jan66/ ORIG REF: 004/ OTH REF: 001

Card 2/2 *HH*

TARASOV, V.Ya.

Simple calculation of involutes of bent rectangular parts. Mashino-
stroitel' no.8:33 Ag '60. (MIRA 13:9)
(Machinery—Design)

TARASOV, Ya. [Tarasau, IA.]

A woman with a big heart. Rab. i sial. 38 no. 3:4-5 Mr
'62. (MIRA 15:2)

(Mogilev--Textile, Synthetic)
(Women--Employment)

~~TARASOV, Y.~~, polkovnik; IL'IN, S., polkovnik

We must try to improve the work of party committees in military
academies in every possible way. Komm.Vooruzh.Sil 1 no.5:26-32
D 60. (MIRA 14:8)
(Russia--Armed forces--Political activity) (Military education)

TARASOV, Ye. (Rostov-na-Donu)

~~Our~~ place is in the field and on the farm. Sov. profsoiuzy 19
no.8:6-7 Ap '63. (MIRA 16:6)

1. Predsedatel' Rostovskogo sel'skogo oblastnogo soveta
professional'nykh soyuzov.
(Rostov Province—Agricultural administration)
(Rostov Province—Trade unions)

TARASOV, Ye.A.

Automatic continuous hoisting in a skip shaft. Ugol' 29 no.12:
(MIRA 8:1)
39-41 D '54.

1. Glavnyy energetik shakhty No. 9 kombinata Intaugol'.
(Mine hoisting)

TARASOV, YE. A.

30V/5186

PLANE I BOOK EXPLOITATION

Academy of Sciences USSR. Central'nyaya nauchno-issledovatel'skaya laboratoriya elektricheskoy obrabotki materialov

Problemy elektricheskoy obrabotki materialov (Problems of the Electrical Machining of Materials) Moscow, Izd-vo AN SSSR, 1960. 247 p. Errata slip inserted. 4,200 copies printed. (Series: Its: Trudy)

Sponsoring Agency: Academy of Sciences USSR. Resp. Ed.: B. R. Lazarenko; Ed. of Publishing House: M. L. Podgostnykh;

Tech. Ed.: S. P. Golub.

PURPOSE: This collection of articles is intended for scientists and technicians concerned with the investigation of new ways of applying electrical energy.

COVERAGE: The book contains articles on studies carried out by the staff of the Central'nyaya nauchno-issledovatel'skaya

30V/5186

Problems of the Electrical (Cont.)

laboratoriya elektricheskoy obrabotki materialov Akademii nauk SSSR (CENTRAL-RESEARCH LABORATORY OF MATERIALS RESEARCH LABORATORY FOR THE ELECTRICAL MACHINING OF MATERIALS OF THE AN SSSR) in searching for new applications of electrical energy. The results of these studies include: the dimensional machining of dielectrics and the utilization of electric pulsed discharges in carrying out certain chemical reactions, new information on processes occurring on electrode surfaces and in the interelectrode space during short pulsing, and some new data on the technological processes in metal machining by electric current pulses. Much attention is paid to the analysis of the operation of power-supply sources used in the electrical machining and arc welding of metals. No personalities are mentioned. References accompany most of the articles.

Lazarenko, B. R., and M. I. Lazarenko. Unused Possibilities for Electrical Energy 5

Pechuro, M. S., A. M. Merkur'ev, E. Ya. Grodzinskiy, and M. I. Sokolova. Study of Physicochemical Changes Occurring in Organic Media Under the Effect of Electrical Discharges 14

Potayev, M. K. Effect of the Condition of the Interelectrode Space on the Performance of the Spark Process, the Wear of the Machining Electrode, the Purity of the Surface Obtained, and the Precision of the Machining 25

Adyan, A. G. Electrostatic Method of Purifying Dielectric Liquids From Products of Spark Machining 36

Lazarenko, B. R., and M. I. Lazarenko. Electric-Spark Method of Perforating Diamonds 51

Zolotykh, B. M., K. Kh. Gilyev, and Ye. A. Tarasov. Concerning the Mechanism of Electrical Erosion of Metal in a Liquid Dielectric Medium 59

S/196/61/000/010/029/037
E194/E155

AUTHORS: Zolotikh, B.N., Gioyev, K.Kh., and Tarasov, Ye.A.

TITLE: The mechanism of electrical erosion of metals in
a liquid dielectric medium

PERIODICAL: Referativnyy zhurnal, Elektrotehnika i energetika,
no.10, 1961, 41, abstract 10K 237. (Symposium "Problems
of electrical machining of materials", M., AS USSR,
1960, 58-64)

TEXT: Electrical erosion of metal in a fluid dielectric was
investigated by a technique which disclosed the dynamics of
formation and collapse of a gas bubble and also the processes
occurring within the bubble and on the electrodes. The
development of processes in the discharge gap was photographed
with a type CΦP (SFR) camera, at the rate of 25-500 thousand
frames per second. The dielectric fluid was kerosine, and the
electrode gap was 10-100 microns. Two arrangements of electrodes
were used, to overcome the considerable influence of large
electrodes on the shape of the gas bubbles. With the first
variant, comprising wire electrodes 0.5-1 mm diameter, records were
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The mechanism of electrical erosion.. S/196/61/000/010/029/037
E194/E155

made of the external appearance of the gas bubble but processes on the electrode remained invisible. In order to record simultaneously both the dynamics of development of the gas bubble and the processes occurring within it, another electrode arrangement was used consisting of a strip of thin copper foil 0.05-0.1 mm thick (anode) firmly pressed against a transparent plate and a copper wire 1 mm diameter (cathode) at an angle of 90° to the plane of the anode. Pictures were taken from the side of the transparent sheet. The following conclusions are drawn: a) in the pulse duration range of 50-100 microseconds, metal removal occurs mainly in the liquid and only partially in the gas phase. b) In the gas phase metal is removed during the current impulse. c) In the liquid phase most of the eroded metal is removed after the end of the impulse. d) Hydrodynamic and gas dynamic processes play a vital part in the mechanism of erosion. Illustrated. 3 literature references.

[Abstractor's note: Complete translation.]

Card 2/2

KUCHEPATOVA, Ye.G.; ROMANOV, I.I.; TARASOV, Ye.F.; SHESTOV, A.I.;
MAKAROV, N.A., otvetstvennyy redaktor; BOYARSKAYA, L., redaktor;
PAVLOVA, M., tekhnicheskiiy redaktor

[The "Urals" pavilion (Sverdlovsk and Molotov Provinces, Udmurt
A.S.S.R., Chelyabinsk and Kurgan provinces); a guidebook] Pavil'on
"Ural" (Sverdlovskaya i Molotovskaya oblasti, Udmurtskaya ASSR,
Cheliabinskaya i Kurganskaya oblasti); putevoditel'. Moskva, Gos.
izd-vo selkhoz. lit-ry, 1956. 27 p. (MIRA 9:8)

1. Moscow. Vsesoyuznaya sel'skokhozyaystvennaya vystavka, 1954-
(Ural Mountain region--Agriculture)
(Moscow--Agricultural exhibitions)

TARASOV, Ye. I.
TARASOV, Ye. I., and GLUKHOVSKIY, B. M.

"The Activation Technology of Alloy Emitters with Various Photo-Cathodes,"

A conference on Electron and Photo-Electron Multiplier; Radiotekhnika i
Elektronika, 1957, Vol. II, No. 12, pp. 1552-1557 (USSR)

Abst: A conference took place in Moscoow during February 28 and March 6, 1957
and was attended by scientists and engineers from Moscow, Leningrad, Kiev
and other centres of the Soviet Union. Altogether, 28 papers were read and
discussed.

RABICHEVA, L.M.; SLONIMSKIY, B.I.; LAZAREV, V.I.; ALYUSHIN, Ye.I.;
POLETAYEV, G.S.; Prinimali uchastiye: TARASOV, Ye.I.;
AFONIN, P.I.; SYROVEGINA, K.V., nauchnyy sotrudnik

Electrothermal method of obtaining zinc dust. Sbor. nauch.
trud. Gintsvetmeta no.18:165-174 '61. (MIRA 16:7)

1. Nachal'nik elektrotermicheskoy ustanovki Belovskogo tsinkovogo zavoda (for Tarasov).
 2. Starshiy master elektrotermicheskoy opytной ustanovki Belovskogo tsinkovogo zavoda (for Afonin).
 3. Gosudarstvennyy nauchno-issledovatel'skiy institut tsvetnykh metallov (for Syrovegina).
- (Zinc--Electrometallurgy)

RABICHEVA, L.M.; LAZAREV, V.I.; ALYUSHIN, Ye.I.; POLETAYEV, G.S.;
Prinimali uchastiye: TARASOV Ye.I.; AFONIN, P.I.; SYROVEGINA,
K.V., nauchnyy sotrudnik; LEVIN, I.Kh., nauchnyy sotrudnik

Obtaining liquid zinc in the electric smelting process. Sbor.
nauch. trud. Gintsvetmeta no.18:175-186 '61. (MIRA 16:7)

1. Nachal'nik elektrotermicheskoy opytной ustanovki Belovskogo
tsinkovogo zavoda (for Tarasov).
2. Starshiy master elektrotermi-
cheskoy opytной ustanovki Belovskogo tsinkovogo zavoda (for Afonin).
3. Gosudarstvennyy nauchno-issledovatel'skiy institut tsvetnykh
metallov (for Syrovegina, Levin).
(Zinc—Electrometallurgy)
(Liquid metals)

TARASOV, Ye. K.

VLADIMIRSKIY, V.V.; TARASOV, Ye.K.; TREBUKHOVSKIY, Yu.V.

Double-focusing beta-spectrometer with high illuminating power.
Prib. i tekhn. eksp. no.1:13-15 J1-Ag '56. (MLRA 10:2)

(Spectrometer) (Beta rays--Spectra)

Transtr. Ye. K.
VLADIMIRSKIY, V.V.; KOMAR, Ye.G.; MINTS, A.L.; GOL'DIN, L.L.; KOSHKAREV,
D.G.; MONOSZON, N.A.; NIKITIN, S.Ya.; RUBCHINSKIY, S.M.; SKACH-
KOV, S.V.; STEEL'TSOV, N.S.; TARASOV, Ye.K.

Basic characteristics of the projected 50-60 Bev proton accelera-
tor with alternating-gradient focusing. Atom.energ. no.4:31-33
'56. (MIRA 9:12)

(Particle accelerators) (Protons)

SOV/120-58-5-2/32

AUTHORS: Orlov, Yu. F. and Tarasov, Ye. K.

TITLE: Excitation of Oscillations in an Electron Cyclic Accelerator by Quantum Fluctuations of Radiation (Vozbuzhdeniye kolebaniy v elektronnom tsiklicheskom uskoritele kvantovymi fluktuatsiyami izlucheniya)

PERIODICAL: Priory i tekhnika eksperimenta, 1958, Nr 5, pp 17-20 (USSR)

ABSTRACT: The effect of considerable growth of oscillations in an electron accelerator was discovered and studied by the authors of Ref.1, and was further investigated in Refs.2 and 3. In Ref.2 this effect was discussed, taking into account the damping of phase and radial oscillations. It was established in Ref.2 that in a usual accelerator with strong focussing, radial oscillations are governed by the formula:

$$r \sim \exp\left(1/2 \int_0^t P_\gamma / E \cdot dt'\right), \text{ where } P_\gamma \text{ is the intensity}$$

averaged over the frequencies of the quanta, and E is the energy of the particle. Phase oscillations are damped with a decrement equal to $2P_\gamma / E$. In the present paper the

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SOV/120-53-5-2/32

Excitation of Oscillations in an Electron Cyclic Accelerator by
Quantum Fluctuations of Radiation

growth of phase and radial oscillations is expressed as a function of a certain general parameter which depends upon the coupling between radial and phase oscillations. The dependence of this parameter on the structure of the magnetic system was discussed in some detail in a previous paper by the present authors (Soviet Physics, 1958, Vol 34 (7), Nr 3, p 449(651) (in English)). General formulae are now obtained for rms amplitudes of phase and radial oscillations which take into account the variation of the magnetic field along the orbit, which is possible in an accelerator with strong focussing. The coupling between the damping factors for phase and radial oscillations is taken into account. The

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